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JUN98 E365085-1 D03052
P01/7700 25.00 - 9811862.3

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The Patent Office
Cardiff Road
Newport
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1. Your reference

A25632

2. Patent application number
(The Patent Office will fill in this part)

9811862.3

02 JUN 1998

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

BRITISH TELECOMMUNICATIONS public limited company
81 NEWGATE STREET
LONDON, EC1A 7AJ, England
Registered in England: 1800000

Patents ADP number *(if you know it)*

1867002

If the applicant is a corporate body, give the country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

DATA NETWORK ACCESS

5. Name of your agent *(if you have one)*

Michael EVERSHED

"Address for Service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

BT GROUP LEGAL SERVICES
INTELLECTUAL PROPERTY DEPARTMENT
HOLBORN CENTRE
120 HOLBORN
LONDON, EC1N 2TE

713 804 3000

Patents ADP number *(if you know it)*

1867001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day/month/year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.

See note (d))

YES

Patents Form 1/77

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Continuation sheets of this form	
Description	5
Claim(s)	2
Abstract	1
Drawing(s)	2

10. If you are also filing any of the following, state how may against each item

Priority Documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

Signature(s) Date:

Michael Eversheds **2 JUNE 1998**

Michael EVERSHED, Authorised Signatory

12. Name and daytime telephone number of person to contact in the United Kingdom

Rohini Ranjitkumar 0171 492 8146

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DATA NETWORK ACCESS

This invention relates to a method of providing a connection between a user's computer connected to a telephone network and a data network through an interface which is connected to both the telephone network and the data network. This invention also relates to an interface for providing such a connection service.

The most widespread data network in use at present is the well-known public Internet. Users computers operated by individuals from their homes or individuals belonging to a small organisation are usually connected to the Internet by a dial-up connection through a telephone network to an interface known as a point-of-presence. In presently known arrangements, the point-of-presence requires the user's computer to provide both a user name and password before it will connect the user's computer to the public Internet. Some users find it inconvenient to establish a user name and password before gaining access to the public Internet.

According to one aspect of this invention there is provided a method of providing a connection service between a user's computer connected to a telephone network and a data network through an interface which is connected to both said telephone network and said data network, said connection service having a dedicated telephone number, said method comprising the steps of:

said user's computer dialling said dedicated telephone number;

in response to said user's computer dialling said dedicated telephone number, creating a connection through the telephone network between said user's computer and said interface;

said interface checking that the connection from said user's computer was received on said dedicated telephone number;

in the event that the connection was received on said dedicated telephone number, said interface allocating a network address to said user's computer and transmitting said allocated address to said user's computer; and

said interface providing a connection between said user's computer and said data network for messages containing said allocated network address.

With this invention, a user's computer can be connected to a data network without verification of a user name or password being necessary.

According to another aspect of this invention, there is provided an interface for providing a connection service between a user's computer connected to a telephone network and a data network, said interface being connected both to said telephone network and said data network, said connection service having a dedicated telephone number, said interface comprising:

means for receiving a call from a user's computer through said telephone network;

means for checking whether the call was received on said dedicated telephone number;

means responsive to said checking means for allocating a network address to said user's computer and transmitting said network address to said user's computer in the event that the call was received on said dedicated telephone number; and

means for providing a connection between said user's computer and said data network for messages containing said allocated network address.

This invention will now be described in more detailed, by way of example, with reference to the drawings in which:

Figure 1 is a block diagram of the components which are used to form a connection between a user's computer and the public Internet in accordance with this invention; and

Figure 2 is a flow chart showing the operations which are used with the arrangement of Figure 1 to form a connection between the user's computer and the public Internet.

Referring now to Figure 1, there is shown a user's computer 1 which is connected to a public telephone network 2. The user's computer 1 may be connected on a digital or ISDN (Integrated Services Digital Network) line or on an analogue line. Where the connection is on an analogue line, the user's computer is connected to the telephone network through to a modem.

The arrangement shown in Figure 1 also includes an interface known as a point-of-presence 7 which is connected to both the telephone network 2 and the public Internet 6. The point-of-presence 7 comprises a network access server 4 and an authentication server 5. Each of the servers 4 and 5 is a computer

configured so as to provide the functionality described below. The server 4 includes a bank of modems for receiving calls on analogue lines.

By way of illustration, Figure 1 shows another user's computer 8 and also a server computer 9 connected to the public Internet 6.

The telephone network 2 has a telephone service billing system 3. The operation of the billing system 3 will be described below.

The point-of-presence 7 is owned by an Internet service provider and the telephone network 2 and the Internet service provider may be the same organisation or separate organisations.

As is well-known, computers connected to the Internet can transmit messages to each other using Internet protocols. These include the transmission control protocol (TCP) and the Internet protocol (IP). Computers connected to the Internet can also retrieve information pages stored on server computers, such as the server computer 9, using higher level protocols. Several higher level protocols have been established for retrieving information pages and these include the File Transfer Protocol, Java Script and the very well-known Hypertext Transfer Protocol. Pages which are transmitted using the Hypertext Transfer Protocol are stored using the well-known Hypertext Mark-up Language. In order to retrieve such pages, a user's computer needs a suitable browser such as the well-known Netscape browser. The combination of the public Internet 6 and server computers connected to it and from which information pages may be retrieved is known as the World Wed Web. Information pages which may be retrieved from such server computers are commonly known as Web pages. Information pages stored on a server computer are usually supplied by one or more information providers.

In presently known arrangements a point-of-presence requires a user name and password before it will form a connection between a user's computer and the public Internet. Some users find it inconvenient to obtain a user name and password. As will be described below, in the arrangement of Figure 1, a user's computer, such as user's computer 1, can be connected to the public Internet without verification of a user name or user password.

Referring now to Figure 2, there are shown the operations which are performed in a connection service for creating a connection between a user's computer, such as user's computer 1, and the public Internet 6.

In a step 20, the user's computer dials a dedicated or special rate telephone number. The user of the user's computer may find it convenient to configure the computer with this dedicated telephone number.

Then, in a step 21, the telephone network 2 forms a connection between the user's computer and the network access server 4 in the point-of-presence 7.

Next, in a step 22, the authentication server 7 checks that the connection from the user's computer has been made on the dedicated telephone number. If the connection has not been made on the dedicated telephone number, in a step 23, access is denied. The user of the user's computer is informed that access has been denied by transmitting a message to the user's computer.

If the connection has been received on the dedicated telephone number, then in the step 24, the network access server allocates an Internet network address to the user's computer and transmits this network address to the user's computer.

Finally, in a step 25, the network access server forms a connection between the user's computer and the Internet 6. The network access server 4 then permits messages to pass between the user's computer and the public Internet. Where such a message is being transmitted from the user's computer to the public network, it will contain the allocated Internet network address as the source address. Where the message is being passed from the public Internet to the user's computer, it will include the allocated Internet network address as the destination address. The user's computer can then transmit messages to other user's computers connected to the public Internet using the Internet protocols mentioned above. The user's computer can also retrieve information pages from the server computer, such as the server computer 9.

The arrangement shown in Figure 1 is capable of providing more than one type of connection service. Each of these services has it own dedicated telephone number.

In the basic service, the user's computer is given general access to the public Internet. Where a user is using this basic service, the user of the user's computer will be charged at a special rate for the use of the connection through the telephone network 2 to the point-of-presence 7. The user will be billed at this special rate by the telephone service billing system 3. Where the point-of-presence

7 and the telephone network 2 are owned by separate organisations, the telephone service billing system credits the owner of the Internet service provider with part of the call charge.

The arrangement shown in Figure 1 can also provide two special services. Some information service providers require a payment for providing information. In the first special service, the network access server 4 provides access to one or a predefined set of server computers which provide information supplied by an information service provider and for which a payment is required. With this first special service, the call connection tariff includes a component to cover the payment required by the information service provider. The telephone service billing system 3 is arranged to credit part of the call charge to the information service provider. Thus, with this first special service, the user's computer gains access both to computers which can be accessed by general users of the Internet as well as the one or predefined set of server computers mentioned earlier in this paragraph.

In the second special service, the user's computer is given access to only one or a set of server computers which contain advertising material supplied by an information service provider. With this second special service, the call tariff is either at a reduced rate or a free rate and the information service provider pays all or part of the call charge. With the second special service, the telephone service billing system 3 is arranged to charge the information service provider for all or part of the call charge. Thus, with this second special service, the user's computer gains access to just one server or to a set of servers which are restricted in comparison with the servers which can be accessed by general users of the Internet.

CLAIMS

1. A method of providing a connection service between a user's computer connected to a telephone network and a data network through an interface which is connected to both said telephone network and said data network, said connection service having a dedicated telephone number, said method comprising the steps of:

said user's computer dialling said dedicated telephone number;

in response to said user's computer dialling said dedicated telephone number, creating a connection through the telephone network between said user's computer and said interface;

said interface checking that the connection from said user's computer was received on said dedicated telephone number;

in the event that the connection was received on said dedicated telephone number, said interface allocating a network address to said user's computer and transmitting said allocated address to said user's computer; and

said interface providing a connection between said user's computer and said data network for messages containing said allocated network address.

2. A method as claimed in claim 1, in which in said step of providing a connection between said user's computer and said data network, said connection is limited to a predefined set of destination network addresses in said data network.

3. A method as claimed in claim 2, in which said predefined set of network addresses includes both network addresses available to general users of said data network and a further set of network addresses.

4. A method as claimed in claim 2, in which said predefined set of network addresses is a restricted set of network addresses in comparison with the network addresses generally available to users of said data network.

5. A method as claimed in any one of claims 1 to 4, in which said data network is the public Internet.

6. An interface for providing a connection service between a user's computer connected to a telephone network and a data network, said interface being connected both to said telephone network and said data network, said connection service having a dedicated telephone number, said interface comprising:

means for receiving a call from a user's computer through said telephone network;

means for checking whether the call was received on said dedicated telephone number;

means responsive to said checking means for allocating a network address to said user's computer and transmitting said network address to said user's computer in the event that the call was received on said dedicated telephone number; and

means for providing a connection between said user's computer and said data network for messages containing said allocated network address.

7. An interface as claimed in claim 6, in which said connection means is arranged to limit said connection to messages containing a predefined set of destination addresses of said data network.

8. An interface as claimed in claim 7, in which said predefined set of network addresses includes both network addresses available to general users of said data network and a further set of network addresses.

9. An interface as claimed in claim 7, in which said predefined set of network addresses is a restricted set of network addresses in comparison with the network addresses generally available to users of said data network.

10. An interface as claimed in any one of claims 6 to 9, in which said data network is the public Internet.

ABSTRACT

(Title)

There is described a method of providing a connection service between a user's computer 1 connected to a telephone network 2 and the public Internet 6 through a point-of-presence 7. In this method, the user's computer dials a dedicated telephone number and a connection is created between the user's computer and the point-of-presence 7. The point-of-presence 7 then checks that the connection has been received on the dedicated telephone number. If the connection has been received on the dedicated telephone number, the point-of-presence 7 transmits an allocated Internet network address to the user's computer 1. The point-of-presence 7 then forms a connection between the user's computer 1 and the public Internet 6 for messages containing the allocated network.

Figure (1)

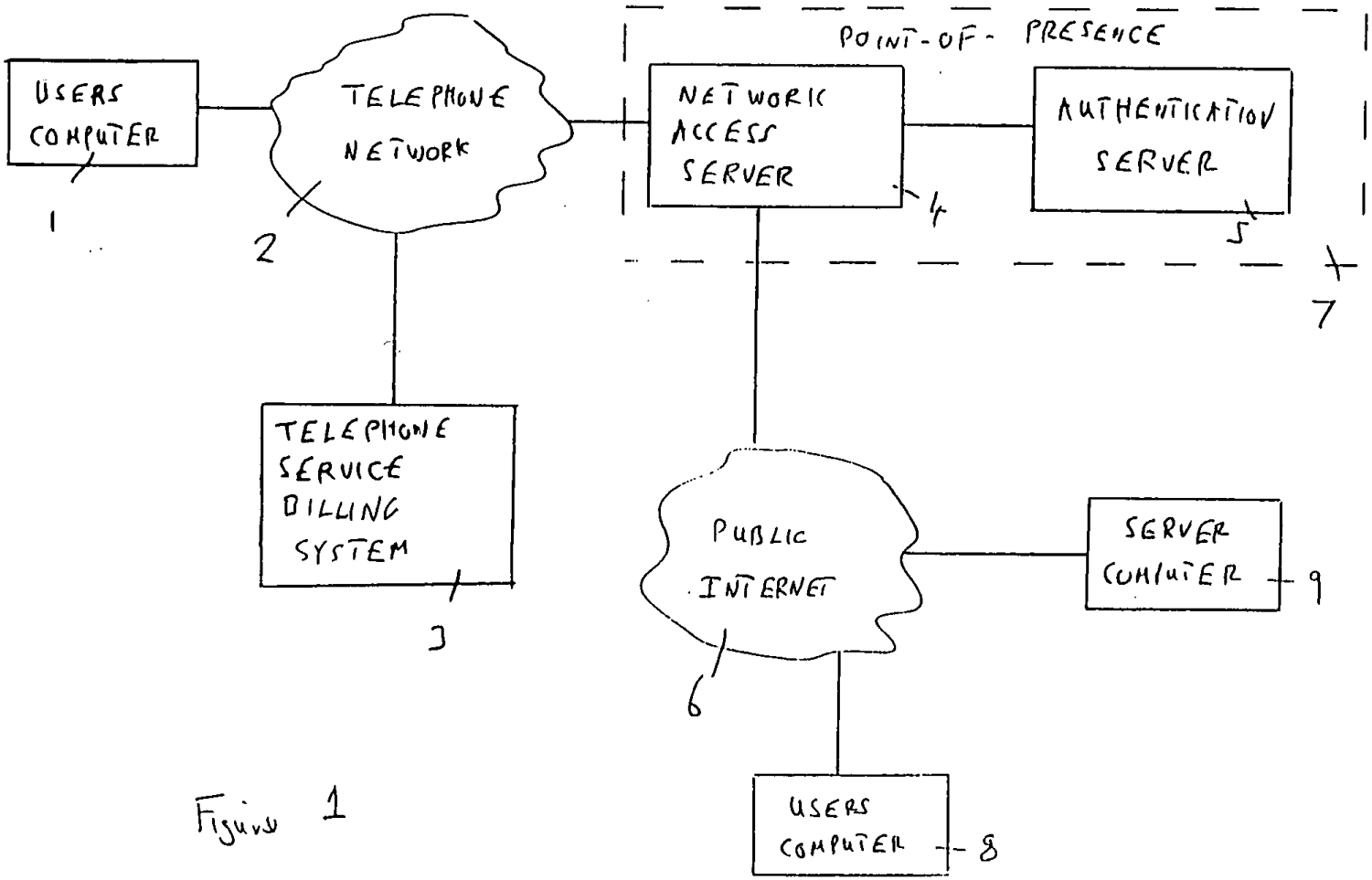
POINT-OF-PRESENCE
USERS COMPUTER
1
TELEPHONE NETWORK
2
NETWORK ACCESS SERVER
4
AUTHENTICATION SERVER
5
7
TELEPHONE SERVICE BILLING SYSTEM
3
PUBLIC INTERNET
6
SERVER COMPUTER
9
USERS COMPUTER
8

Figure 1

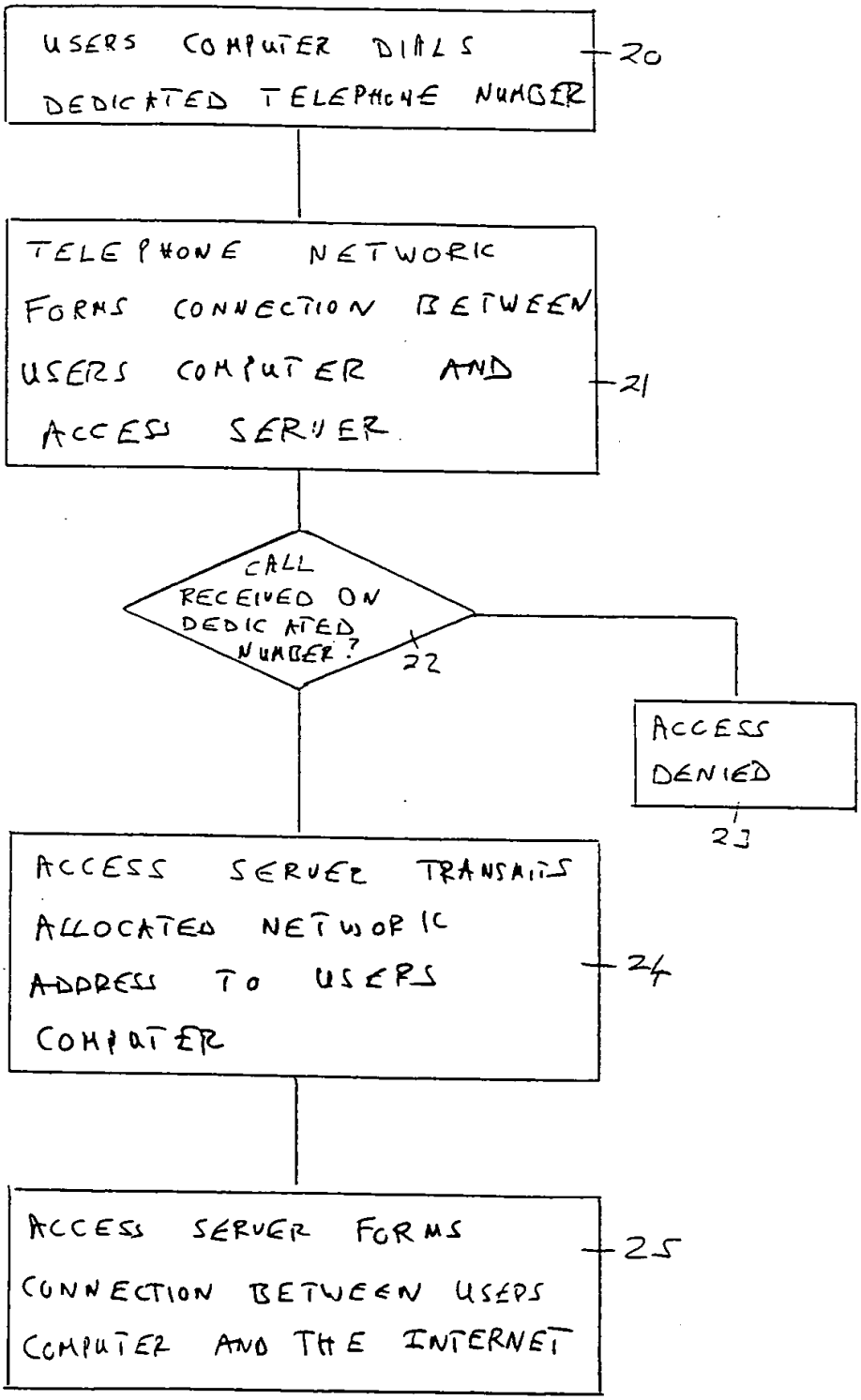
USERS COMPUTER DIALS DEDICATED TELEPHONE NUMBER
20
TELEPHONE NETWORK FORMS CONNECTION BETWEEN USERS COMPUTER AND ACCESS SERVER
21
CALL RECEIVED ON DEDICATED NUMBER?
22
ACCESS DENIED
23
ACCESS SERVER TRANSMITS ALLOCATED NETWORK ADDRESS TO USERS COMPUTER
24
ACCESS SERVER FORMS CONNECTION BETWEEN USERS COMPUTER AND THE INTERNET
25

Figure 2